

AM

Notice of Allowability

Application No.

10/791,725

Examiner

Mohamed Charioui

Applicant(s)

MARUYAMA, DAISUKE

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/13/05.
2. ☒ The allowed claim(s) is/are 1-54, renumbered.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Allowable Subject Matter

1. **Claims 1-54** are allowed.
2. **Claims 1-54** are renumbered.
3. The following is an examiner's statement of reasons for allowance:

Regarding claims 1-10, none of the prior art of record teaches or suggests a narrowing step wherein an area including a sending FF group corresponding to failure presumption points, a receiving FF, and further, a preparation FF group that is one-stage precedent to said sending FF group is specified as a processing target circuit by a narrowing processing unit and an allocation of a don't care X is permitted as a state for activating the propagating path of the failure, and in the failure propagating step, after the change in network, the state is transferred from the don't care X to an uncontrol value, thereby activating the propagating path of the failure, in combination with the rest of the claim limitations.

Regarding claims 11-21, 31 and 32, none of the prior art of record teaches or suggests a narrowing step wherein an area including a sending FF group corresponding to failure presumption points, a receiving FF, and further, a preparation FF group that is one-stage precedent to the sending FF group is specified as a processing target circuit and an allocation of a don't care X is permitted as a state for activating the propagating path of the failure, and in the failure propagating step, after the change in network, the state is transferred from the don't care X to an uncontrol value, thereby activating the propagating path of the failure, in combination with the rest of the claim limitations.

Regarding claim 22, none of the prior art of record teaches or suggests a narrowing unit which specifies an area including a sending FF group corresponding to failure presumption points, a receiving FF, and further, a preparation FF group that is one-stage precedent to the sending FF group as a processing target circuit, and the failure propagating state setting unit permits an allocation of a don't care X as a state for activating the propagating path of the failure, and the automatic test pattern generation control unit transfers the state from the don't care X to an uncontrol value after the change in network, thereby activating the propagating path of the failure, in combination with the rest of the claim limitations.

Regarding claims 23 and 24, none of the prior art of record teaches or suggests a generating means for generating a test pattern constructed by a set of input values to the sending FF group and output values of the receiving FF group as expectation values against the input values when a propagation of a state showing the circuit operating mode for detecting the delay failure is successful and that the state showing the circuit operating mode for activating the propagating path of the failure after the network change is a state which is shifted to an uncontrol value from a don't care value X, in combination with the rest of the claim limitations.

Regarding claim 25, none of the prior art of record teaches or suggests an exclusion means for excluding the failure presumption points from targets of the delay failure when the control value (u) has been allocated to the failure presumption points, and when it is determined that the failure excitation is impossible, in combination with the rest of the claim limitations.

Regarding claim 26, none of the prior art of record teaches or suggests a presumption means for presuming the failure propagation to a branch input in a fan-out free area where a circuit having a branch output does not exist, in combination with the rest of claim limitations.

Regarding claims 27, 28, 35, 36, 43, 44, 51 and 52, none of the prior art of record teaches or suggests a generating means for generating a test pattern for detecting a delay failure in a gate input for driving a path cut point of a circuit; a fixing means for fixing a state showing a circuit operating mode by giving control values of a gate at a sending time and a receiving time, or by giving an uncontrol value of the gate to all gate inputs at the sending time and the receiving time and allocating means for allocating a fixed state having a change "from 0 to 0" or "from 1 to 1" as the state showing the circuit operating mode at the cut point, in combination with the rest of the claim limitations.

Regarding claims 29 and 30, none of the prior art of record teaches or suggests a marking means for marking a narrowing range by back traces of two stages from a failure presumption point of a circuit to generate a test pattern for detecting a delay failure to a sending FF group via a receiving FF group and from the sending FF group to a preparation FF group and stopping means for stopping the execution of the back trace if both states showing a circuit operating mode at the sending time and the receiving time of a network are not a don't care value X.

Regarding claims 33, 41 and 49, none of the prior art of record teaches or suggests that if a clock-off has been allocated to a sending FF at a sending time, an

uncontrol value (u) showing that the failure excitation is impossible is conditional-implicated in a failure value corresponding to an output of the sending FF at a receiving time, and when the uncontrol value (u) has been allocated to the failure presumption points, it is determined that the failure excitation is impossible, and the failure presumption points are excluded from targets of the delay failure, in combination with the rest of the claim limitations.

Regarding claims 34, 42 and 50, none of the prior art of record teaches or suggests that among the failures which are presumed on a network from failure presumption points, on the network, where the failure which failed in the failure propagation has been presumed to a branch input in a fan-out free area where a circuit having a branch output does not exist, the failure in which an inverting relation of a failure value is equal to that of the failed failure and the failure value is equal to a control value of a gate is extracted, thereby excluding the failure presumed on the network as an undetectable failure, in combination with the rest of the claim limitations.

Regarding claims 37, 38, 45, 46, 53 and 54, none of the prior art of record teaches or suggests a narrowing range is marked by back traces of two stages from a failure presumption point of a circuit to generate a test pattern for detecting a delay failure to a sending FF group via a receiving FF group and from the sending FF group to a preparation FF group, and if both states showing a circuit operating mode at the sending time and the receiving time of a network are not a don't care value X, execution of the back trace after the network is stopped.

Regarding claims 39, 40, 47 and 48, none of the prior art of record teaches or suggests a failure presumption points of a processing target circuit including a sending FF group, a receiving FF group, and further, a preparation FF group that is one-stage precedent to the sending FF group; and a test pattern constructed by a set of input values to the sending FF group and output values of the receiving FF group as expectation values against the input values is generated, wherein, further, when the state showing the circuit operating mode for activating the propagating path of the failure after the network change is a state which is shifted to an uncontrol value from a don't care value X, in combination with the rest of the claim limitations.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohamed Charioui whose telephone number is (571) 272-2213. The examiner can normally be reached Monday through Friday, from 9 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S Hoff can be reached on (571) 272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

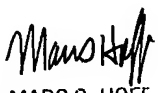
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mohamed Charioui

11/21/05


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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